

the Ohio valley to Western Pennsylvania. The remarkable contrasts of temperature noted in a subsequent portion of this review formed the most notable features of the storm-centre which soon seemed to die away.

XI. The belt of isotherms above alluded to as originating on the dissolution of storm No. X seems to have lasted until the development of No. XI disturbed its arrangement. The passage of No. IX from the Pacific coast had been followed on the 21st by the area of highest barometric readings that appeared on that coast during the month. The cold northerly winds from this area of high barometer prevailed over the Lower Missouri, Upper Mississippi and Ohio valleys, and in Texas on the morning and afternoon of the 21st; apparently there formed in consequence some precipitation in Southern Texas and off the Texas coast, for by midnight the coast winds had veered to south and east with rising temperature. During the whole of this night the rainfall was quite large in Tennessee, and the area of lowest pressure after moving into that State extended simultaneously and rapidly to the northeast and northwestward, and on the morning of the 23d was represented by two depressions, respectively, over Upper Michigan and the Lower Lake region. The former disappeared from the cognizance of the signal stations, and the latter passed over the mouth of the St. Lawrence river.

XII. The cold northerly winds attending the high barometer that followed the preceding storm seem to have underrun the warmer and moister air of the Gulf and the Atlantic, between latitudes 25° and 30° , so that already on the morning of the 23d, the Texas "Norther," and its feebler representative in Alabama were attended by the inviolable upper southerly cloud-bearing current moving toward the centre of low temperature and high barometer. During the 24th, there appeared traces of an incipient storm-centre in the northern portions of the Gulf, while cold north and northeast winds, with sleet, rain and high barometer, prevailed on the South and Middle Atlantic coasts, probably indicating the simultaneous development, in a similar manner, of a storm-centre at some distance east of the Carolina coast. On the 25th, this latter centre had moved on to the coast of New Jersey, while the depression in the Gulf of Mexico had moved eastward over the Florida peninsula and disappeared, possibly uniting with its predecessor.

The storm-centre then advanced rapidly northeastward along the New England coast; it was in the afternoon of the 26th east of Cape Breton. This storm appears to be the same as that experienced by the steamer "Donau," which met a violent hurricane shortly before reaching New York on the 27th. The same hurricane was also met by the steamships "Russia," "City of Dublin," "Wisconsin" and "Andes," and the latest report received concerning it is from the steamship Pennsylvania, which experienced a violent hurricane at midnight of the 27th.

CAUTIONARY SIGNALS.

There have been displayed during the month at stations in the United States ninety cautionary signals, while to the Canadian stations forty-two storm warnings have been sent. Of these latter the tri-daily weather maps show with more or less certainty that twenty were verified by the storm-winds following within twenty-four hours after the observations were made upon which the warnings were based. Of the remaining twenty-two signals, eighteen appear not to have been verified, while two orders, classed as late, were sent after the winds had become dangerous, because it was anticipated that these would so continue for some time; concerning the verification of two others, no informa-

tion is at present available. Of the ninety signals displayed at stations in the United States, twenty-three are classed as late, the orders having been issued immediately on the reception of the news of unexpected strong winds; other twenty-three are reported by the observers as not verified at the station, but of these twelve appear to have been verified within one hundred miles thereof, leaving fifty-six signals or sixty-two per cent. verified. Three cases are reported in which dangerous winds prevailed for a short time without the display of signals.

BAROMETRIC PRESSURE.

The isobars given on Map No. 2 show that the area of high pressure on the Pacific Ocean has, as usual, as shown by the charts published by the British Admiralty, encroached upon the coast of California; on the other hand, the area of high barometer over the Atlantic Ocean has apparently extended somewhat further eastward than usual. The lowest pressure is found on Lake Superior in apparent contradiction to the generalizations deduced by Mr. Buchan from his isobaric charts for the world.

TEMPERATURE.

The temperature during this month has been about the average of many years past, the most decided departure being in Minnesota, Wyoming and Colorado. On the 24th, in the latter Territories, the thermometer indicated the lowest temperature ever recorded there, it being -24° at Cheyenne, -17° at Colorado Springs, -9° at Denver and 0 at Santa Fe.

The isothermal lines for the month are given on Map No. 2. In drawing these, some use has been made of the observations made by the corps of voluntary observers reporting to the Signal Office.

The southeastern side of a region of cold air and high barometer, generally presents cases of extreme contrasts of temperature, and such have been quite frequent during this month. The most remarkable instance was noted on the afternoon of February 22d, and it is worthy of special attention, since similar cases have occurred but three or four times during the last three years. On the date in question a line drawn northward through Louisiana to Vicksburg, thence northeast to Baltimore and thence southeast to the Atlantic coast, separated the area of cold northeast winds and rain on the northward from that of warm southwest winds to the southward. This belt of great thermal contrasts had existed on the 20th, and extended slowly eastward until the 23d.

The greatest contrast recorded is found in the Middle Atlantic States, although probably parallel cases occurred at other places, where the Signal Office has no stations. At New York the temperature of 41° , with northeast winds is first recorded on the 21st at 7.35 A. M., and continued uniformly until the 23d 7.35 A. M. At Philadelphia there were northeast winds, temperature 44° on the 22d 7.35 A. M., and continuing uniformly until the 23d 7.35 A. M.; at Baltimore, northeast winds, temperature 58° on the 22d 11 P. M., this is the only northeast wind reported at Baltimore. During the three days in question Baltimore, as also always Washington, experienced only warm southwest winds.

On the 21st, 4.35 P. M.

On the 22d, 4.35 P. M.

On the 23, 7.35 A. M.

New York, wind E, temp. 51° .

Philadelphia, wind, NE, temp. 47° .

Philadelphia, wind, E, temp. 41° .

Philadelphia, wind SW, temp. 67° .

Baltimore, wind SW, temp. 73° .

Baltimore, wind, SW., temp. 62° .